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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,448	04/04/2006	Guofu Zhou	P4509US00	9649

58027 7590 01/10/2012

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EXAMINER	
LAM, VINH TANG	
ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
01/10/2012	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/574,448	ZHOU ET AL.	
	Examiner	Art Unit	
	VINH LAM	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 November 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *24* is/are pending in the application.

5a) Of the above claim(s) *4-17 & 19-24* is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-3 & 18* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *1 04 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☒ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/GB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) a patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims **1-3** and **18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Loxley et al. (US Patent No. 6262833)** in view of **Sato (US Patent No. US 4041481)**.

Regarding Claim **1**, (Currently amended) **Loxley et al.** teach a display device comprising:

at least one picture element *(Col. **5**, Ln. **44-57**, FIG. **1**, i.e. capsule **2**)* having an optical switch *(Col. **4**, Ln. **44-54**, FIG. **1**, i.e. means for changing optical states)* having first and second electrodes *(Col. **5**, Ln. **59-68**, Col. **6**, Ln. **1-12**, FIG. **1**, i.e. front electrode **16** and rear electrode **18**)*;

at least one first fluid *(Col. **5**, Ln. **44-57**, FIG. **1**, i.e. fluid **6**)* and a second fluid *(Col. **5**, Ln. **44-57**, FIG. **1**, i.e. fluid **10**)* immiscible with each other *(Col. **2**, Ln. **5-15**)* above a first support plate *(Col. **5**, Ln. **44-57**, FIG. **1**, i.e. capsule wall **4**)*, the second fluid being electro-conductive or polar *(Col. **2**, Ln. **37-66**, Col. **3**, Ln. **1-17**, i.e. **ethanol** as an alcohol, therefore, not only being polar according to the Instant Application*

*Specification [0022] on PGPub. but also obviously because of ethanol's intrinsic molecular formula CH_2-**OH** where polarization defined at the Oxygen and Hydrogen elements similar to those of the water)*;

a driver *(Col. **5**, Ln. **59-68**, Col. **6**, Ln. **1-12**, FIG. **1**, i.e. means for applying electric field)* for moving the first fluid *(Col. **5**, Ln. **59-68**, Col. **6**, Ln. **1-12**, FIG. **1**, i.e. particles **12** in fluid **6**)* or breaking it up into small droplets by applying voltages to the first and second electrodes of the optical switch *(Col. **5**, Ln. **59-68**, Col. **6**, Ln. **1-12**, FIG. **1**)*, the voltages are associated with a plurality of electro-optical states of the picture element *(Col. **5**, Ln. **59-68**, Col. **6**, Ln. **1-12**, FIG. **1**, i.e. obviously variation of voltages corresponding to variation of brightness between dark and white)* in a range between and including a first extreme state and a second extreme state *(Col. **5**, Ln. **59-68**, Col. **6**, Ln. **1-25**, FIG. **1**, i.e. dark and white)*.

However, **Loxley et al.** do not teach that the driver provides variable voltages prior to applying a fixed voltage producing optical state and the variable voltages having a mean voltage equal to the fixed voltage.

In the same field of endeavor, **Sato** teaches wherein during selection *(FIGs. **7G-7I**, i.e. T_E-T_{Xn} periods because it is obvious that the cells must be selected for erasing and writing images)* of the at least one picture element *(FIG. **7G**, i.e. **C11**)*, the driver provides variable voltages *(Col. **7**, Ln. **19-21**, FIG. **7G**, i.e. **erase pulses** during T_E)* to the picture element prior to applying a fixed voltage *(Col. **7**, Ln. **40-58**, FIG. **7G**, i.e. **0V** during Tp)* associated with an electro-optical state *(Col. **7**, Ln. **40-58**, FIG. **7G**, i.e. **0V** during Tp would obviously produce an electro-optical state; Col. **8**, Ln. **5-16**, FIG. **8**, i.e.*

the longer the pause interval T_p, the less the electrophoretic migration (i.e. migration of the charged particles) [which is obviously indicative of an optical state]) of the picture element that corresponds to a desired image grayscale to be set *(FIG. **7G**, i.e. **0V** during T_p would obviously produce a desired image grayscale of **C11**; Col. **8**, Ln. **5-16**, FIG. **8**, i.e. less change in brightness])*, the provided variable voltages having a mean voltage *(Col. **7**, Ln. **40-58**, FIG. **7G**, i.e. **0V** during T_E)* substantially equal to the fixed voltage *(Col. **7**, Ln. **40-58**, FIG. **7G**, i.e. **0V** during Tp).*

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Loxley et al.** teaching of a display device having picture element, driving means, and range of electro-optical states with **Sato** teaching of driving means providing variable voltages prior to applying a fixed voltage to the display device *to enhance the image quality by eliminating the cross effect of the display.*

Regarding Claim **2**, (Currently amended) the display device according to claim 1, wherein **Loxley et al.** teach the first support plate is transparent *(Col. **5**, Ln. **44-57**, FIG. **1**, i.e. obviously so that viewers can differentiate the colors of the fluid 10 and/or particles 12)*, the display device comprising a second support plate *(Col. **5**, Ln. **44-57**, FIG. **1**, i.e. capsule wall **4**)* and the first and second fluids being within a space between the first support plate and the second support plate *(Col. **5**, Ln. **9**, FIG. **1**, i.e. "The capsules may be of any size or shape.", e.g. cubical shape with 6 support plates).*

Regarding Claim **3**, (Currently amended) the display device according to claim 1, wherein **Sato** teaches the variable voltages comprise a plurality of alternating voltages *(Col. **7**, Ln. **19-21**, FIGs. **7G-7I**, i.e. **erase pulses** during T_E).*

Regarding Claim **18**, (Previously presented) the display device according to claim 1, wherein **Loxley et al.** teach the variable voltage includes one of the first and second extreme states *(Col. **5**, Ln. **44-68**, Col. **6**, Ln. **1-12**, FIGs. **1 & 2**).*

Response to Arguments/Amendments/Remarks

2. Claims **7**, **15-17**, and **19-20** are canceled.

3. Claims **4-6**, **8-14**, and **21-24** are withdrawn.

4. Applicant's arguments filed 11/22/2011 have been fully considered but they are not persuasive.

First of all on P. 7-8, applicant argues that **Loxley et al.** and **Sato** "are from separate fields of endeavor". However, the Examiner respectfully disagrees because **Sato** Patent issued in **1977** when it was classified in **340/324** which is no longer existed. In contrast, **Loxley et al.** issued in **2001** when it was classified in any of **359/296, 204/450, 204/606, 264/4, 345/107** depends on the claimed language. **Loxley et al.** and **Sato** are from same fields of endeavor since the inventions concerning *electrophoretic* display.

Secondly on P. 8-9, applicant argues that **Sato** Erase Period, T_E "does not take place *"during selection of the at least one picture element"*" since **Sato** also has a plurality of "selection" periods, T_S. However, the Examiner respectfully disagrees because:

(i) **Sato** electrophoretic device is divided into periods according to **Sato** lexicographer. Other inventor would have identified Erase, Pause, and Selection Periods as Initial, Intermediate, and Data Periods respectively.

(ii) The applicant's limitation *"during selection of the at least one picture element"* does not confined to any **Sato** Periods, especially Selection Period of **Sato**.

(iii) Hypothetically, if *"the at least one picture element"* is *not selected*, how would *"the at least one picture element"* be erased, paused, and supplied data?

(iv) Nothing in applicant's original specification defines *"during selection of the at least one picture element"* must be in any period or equivalent to Selection Period of **Sato**. Specifically, applicant's original specification defines *"during selection of the at least one picture element"* as *"applying voltages to the electrodes associated with a range of electro-optical states of the picture element between and including a first extreme state and a second extreme state"* (Applicant's original disclosure in PGPub. [0007]).

Finally on P. 8-9, applicant argues that **Sato** does not teach the fixed voltage *"associated with an electro-optical state of the picture element that corresponds to a desired image grayscale to be set"*. However, the Examiner respectfully disagrees because:

(i) At **±3V** of FIG. 7I, the electrophoretic panel undisputedly displays the two extreme states (**maximum** and **minimum** grayscales). Therefore, one ordinary skill in the art would conclude that, at **0V**, the electrophoretic panel undisputedly displays the **nominal** grayscale which is (used during Pause Period, T_P) *"associated with an electro-*

optical state of the picture element that corresponds to a desired image grayscale to be set".

(ii) Also **Sato** explicitly teach

a fixed voltage *(Col. **7**, Ln. **40-58**, FIG. **7G**, i.e. **0V** during Tp)* associated with an electro-optical state *(Col. **7**, Ln. **40-58**, FIG. **7G**, i.e. **0V** during Tp would obviously produce an electro-optical state; Col. **8**, Ln. **5-16**, FIG. **8**, i.e. the longer the pause interval T_p, the less the electrophoretic migration (i.e. migration of the charged particles) [which is obviously indicative of an optical state])* of the picture element that corresponds to a desired image grayscale to be set *(FIG. **7G**, i.e. **0V** during T_p would obviously produce a desired image grayscale of **C11**; Col. **8**, Ln. **5-16**, FIG. **8**, i.e. less change in brightness]).*

Conclusion

The prior art(s) made of record and not relied upon (is)/are considered pertinent to applicant's disclosure: Sterling, James D. et al. (US Patent/PGPub. No. 2004/0231987).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571)270-3704. The examiner can normally be reached on M-F (7:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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